BUSS 230 - Mid-Term Exam : March 25, 2004

I. Multiple Choice

1	b
2	a
3	d
4	a

5	d
6	e
7	c
8	a
9	b
10	d

11	d
12	a
13	c
14	b
15	a

II. True or False

1. FALSE
Business profit is equal to total revenue minus **EXPLICIT** costs.

2. FALSE
The monopoly theory of profit argues that because of restricted entry into an industry, firms can continue to earn profits even in the long-run.

3. FALSE
Total cost is equal to average cost multiplied by output.

4. FALSE
Profit is at a maximum when Marginal Revenue equals Marginal Cost.

5. FALSE
Market demand is obtained as the **HORIZONTAL** summation of individual demand curves.

6. FALSE
% change of **QUANTITY DEMANDED** divided by % change in the **PRICE** of other good.

7. FALSE
The more independent variables, the lower the degree of freedom for a given sample.

8. FALSE
D-W statistic tests for the presence of autocorrelation in the error terms in predicting the dependent variable (Y).

9. TRUE
The trend of time-series data over several years is referred to as the secular trend.

10. FALSE
The use of Leading Indicators is an example of **BAROMETRIC** forecasting methods.

Optimum combination occurs where the two partial derivatives are set at zero.
Taking partial derivatives: d (P)/d (X) = 144 - 6 X - Y = 0
d (P)/d (Y) = 116 - 4 Y - X = 0
Solving the two equations simultaneously results in **X = 20** and **Y = 24**.

III. B At the optimum output combination:
Profits = 144x(20) - 3x(20)^2 - (20)x(24) - 2x(24)^2 + 116x(24) -35 = **2797**

III. C Solving by adding the LAGRANGIAN function: L(X + Y - 36)
d (P')/d (X) = 144 - 6 X - Y + L = 0
d (P')/d (Y) = 116 - 4 Y - X + L = 0
d (P')/d (L) = X + Y - 36 = 0==========> - 108 + 3 X + 3 Y = 0
Getting rid of the (L) term first : 28 - 5 X + 3 Y = 0
Eliminating (Y) in the above two equations results in -136 + 8 X = 0 **X = 17**
Substituting in the constraint ==========> **Y = 19**

IV. A The signs of all the coefficients are consistent with theoretical expectations:
Partial d(Q)/dP < 0====> Inverse relation between Q and P, as expected.
Partial d(Q)/dI > 0====> Consistent with coffee being a normal good.
Partial d(Q)/dPr > 0====> Consistent with related good being a coffee substitute.
Partial d(Q)/dT < 0====> Consistent with downward trend in coffee consumption.

IV. B At **5% significance** level and with **27 Degrees of Freedom**, **Critical t is 2.052**. Coefficients of P, I, and T exceed critical t, implying they are significantly different from zero. Coefficient for Pr is not significantly different from zero.

IV. C R-square of 0.80 indicates that regression explains 80% of the proportion of the sum squared deviations of the Y-values from the mean Y-value. As such, the regression is a reasonably good fit of the underlying data.
Since R-square = 0.80, SSR = 4 SSE, and since Calculated F-stat = SSR/(k-1)/SSE/(n-k), **Calculated F-stat = 4SSE/(k-1)/SSE/(n-k)**
With k = 5, and n-k = 27, **Calculated F-stat = 27** which exceeds **Critical F of 2.73.**
Therefore the independent variables taken together explain the behavior of Y.

IV. D Critical D-W values for 4 independent variables and 32 observations are:
d_L = 1.08 and d_U = 1.63
Since **Calculated D-W of 1.85 > d_U**, we reject the presence of autocorrelation.

IV. E Forecast for Q in second quarter of 2003 is:
Q = 2.50 - 0.25X2.00 + 0.50x20.00 + 0.4x1.00 - 0.10x34 = **9**

V. A Arc cross elast = ((6500-8000)/0.5*(6500+8000))/((30-35)/0.5*(35+30)) = **1.345**

V. B Arc price elasticity = - 1.5 = ((8000-6500)/0.5*(8000+6500))/((P-25)/0.5*(P+25))

- 1.5 = ((1500/7250)/((P-25)/(P+25))=====> -29*(P-25)= 2*(P+25)
675 = 31 P, P = **21.7742**

V. C TR before cut = 8000*25 = **200,000**
TR after competitor's cut and reaction to that = 8000*21.774 = **174,194**